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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,111	06/27/2003	Wei Helen Li	LAA-103-US	3644

7590 07/26/2005  
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EXAMINER

SANDERS, KRIELLION ANTIONETTE

ART UNIT PAPER NUMBER

1714

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/607,111

Applicant(s)

LI ET AL.

Examiner

Kriellion A. Sanders

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 9-32 and 36-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 33-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/4, 3/28, 5/9 & 31.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of Group I, claims 1-8 and 33-35 in the reply filed on 5/16/05 is acknowledged. The traversal is on the ground(s) that no additional effort would be required to search and examine all of the claims in the application. This is not found persuasive because the basis of the restriction requirement is Groups I and II are related as mutually exclusive species in an Intermediate/Final Product relationship. Applicant provided no evidence that the species are obvious variants.

The requirement is still deemed proper and is therefore made FINAL.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi et al, US Patent No. 6429157 in view of Ishida et al, US Patent No. 6207786 and Ishida, US Patent No. 5543516.

Kishi et al discloses a woven fabric prepreg comprising:

- (A) a woven fabric comprising a plurality of reinforcing fibers;
- (B) a matrix resin surrounding said fibers and comprising a thermosetting resin or a thermosetting resin composition which may be an acrylonitrile-butadiene copolymer rubber ; and

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(C) 2-15% by weight based upon the weight of resin (B)+(C) of fine particles of at least one resin selected from the group consisting of polyamides, polyethers, polyesters, polyimides, polysulfones and polyurethanes.

Kishi et al preferably employs a benzoxazine type phenol resin as the thermosetting resin. A benzoxazine type phenol resin is a resin having oxazine rings synthesized from a phenol, aldehyde and amine. The presence of secondary amine terminal groups is not precluded from the benzoxazole phenol resin of the invention. See col. 8, line 44 through col. 9, line 17.

Ishida et al discloses ternary systems of benzoxazine, epoxy, and phenolic resins. The epoxy acts as a viscosity reducing reactive diluent and crosslink enhancer. The phenolic resin functions as a polymerization catalyst for the benzoxazine and/or a hardener for the epoxy resin. Benzoxazine increases the Tg and decreases water up-take. See col. 1, lines 5-14 and claim 1.

Ishida discloses a novel method for the preparation of benzoxazine compounds from phenolic derivatives, aldehydes, and primary amines. The benzoxazine compounds have the same structural formulae as those of applicant's claims.

See col. 4, line 25 through col. 7, line 42.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to synthesize the benzoxazine monomers of Ishida and utilize them in the ternary system of Ishida et al. Since the benzoxazine compounds are reactive in nature the resin which would result from the reaction of the benzoxazine and phenolic components that are part of the

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ternary system of Ishida et al would have been equivalent to the benzoxazine type phenol resin of kishi et al.

Therefor the composition of Kishi et al includes benzoxazine and acrylonitrile-butadiene copolymer. Kishi et al further indicates that it is preferable that the acrylonitrile-butadiene rubber of the composition possess functional groups, such as carbonyl and amino groups. Therefor the use of an acrylonitrile-butadiene rubber having secondary amine terminal groups would have been an obvious variation. See col. 9, line 49 through col. 10, line 9.


Specific properties such as glass transition temperature, Delta H and toughness are functions of the components employed and are varied by controllable circumstances such as weight ratios and molar percentages of the components. The ordinary practitioner would have found it obvious to vary these functionalities to achieve the most optimal properties for the formulation of the desired prepegs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 6:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Kriellion A. Sanders  
Primary Examiner  
Art Unit 1714

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